Does it make sense to distinguish between the natural sciences and the humanities?

Prof D.F.M. Strauss

Samevatting

Talle pogings is aangewend om te kom tot 'n sinvolle onderskeiding tussen die natuurwetenskappe en die geesteswetenskappe. Aan die hand van *universaliteit* en *individualiteit* as maatstawwe onderskei Rickert tussen die natuurwetenskappe wat *generaliserend* te werk sou gaan en die historiese geesteswetenskappe wat *individualiserend* werk. Windelband benader dieselfde met behulp van die terme *nomoteties* (wet-stellend) en *idiografies* (uniek-soekend). Pannenberg verbind individualiteit met die aard van 'n totaliteit (geheelheid), terwyl Gadamer terrugryp na 'n uitspraak van Helmholtz uit die jaar 1862 waarin hy beweer dat daar geen besondere metodes is wat hierdie twee groepe wetenskappe van mekaar onderskei nie.

'n Alternatiewe weg word in hierdie artikel ondersoek vanuit die uniekheid van wetenskaplike denke (met inagneming van die verskil tussen gedeelde en onderskeidende eienskappe). Aan die hand van modale abstrahering as onderskeidende kenmerk van wetenskaplike denke word die onderskeiding verantwoord terwyl tegelyk lig gewerp word op die onvermydelikheid van wysgerige vooronderstellinge in die verskillende vakwtenskappe.

1. From natural science to historicity and interpretation

The apparent unrivaled success of the mathematically based natural sciences during the ascent *of* the industrial-technological era of the past 150 years gives credibility to the claim *of* positivism and neo- positivism, namely that science *is identical* to *natural science.* However, concurrent with this development another tendency established itself. In order to understand this course of events we need to go back to the rise of historicism at the transition from the 1 8th to the 1 9th century.

Historicism and 20th century hermeneutics (two important cornerstones of postmodernity) eventually, as we shall demonstrate below, challenged this positivist claim. Kuhn pursued this further by emphasizing the *his-*

toricity of science in terms of paradigm shifts – thus drawing a key element of hermeneutics to its conclusion, the insight namely that all science inevitably is also bound to *interpretations* of *interpretations.*

The *sign-character* of language caused De Saussure and Derrida to question a direct appeal to a referent *(denotation* cannot escape from *connotation).*

2. Universality and individuality as criterion of demarcation

Historically preceding this development is the position taken by the Baden School of neo-Kantianism. Both Windelband and Rickert proposed to distinguish between the natural sciences and the humanities by employing the difference between *universality* and *individuality. Wil*helm Windelband presented his influential rectorial oration on *Geschichte und Naturwissenschaft* in 1896. Here he distinguishes between two different *types* of science: *nomothetic* and *ideographic* (the former sets out to grasp what is *universal* and the latter aims to understand the *unique* and *individual).* Rickert argues that we can subsume the world under two different *logical points* of view: if we view *it* from *the* perspective of *the universal it* becomes **nature** (studied *by the generalizing natural sciences);* if *we view it* from *the* perspective of *the unique* and *individual it* becomes **history** (studied by *the individualizing cultural sciences).*

The distinction between *universality and individuality is not* adequate *to* demarcate the *natural* sciences *from* the humanities. The statistical formulation of physical laws acknowledges uniqueness

and individuality while, by contrast, no single science within the humanities can escape from some or other form of *universality.* The investigation of *logical argumentation,* for example, requires the *universal* presence of logical capacities amongst human beings irrespective of the varying forms it may assume in different cultures. The same applies to forms of art, law, economics, social interaction, and so on.

3. Wholeness combined with individuality as distinctive feature of the humanities: Pannenberg

Pannenberg argues "that the concept of the whole plays a fundamental role in the so-called human sciences *[Geisteswissenschaften]* similar to that of law in the natural sciences" (1990:136). He holds that this claim does not imply the well-known dualism of natural and human sciences because "the concept of the whole, as a universal category, is also applicable to objects of nature, and it underlies the description of nature utilized in the natural sciences as well" (1990:136). Pannenberg realizes that

the concept of the whole not only underlies the notion of a material body since it also plays a role in the theory of systems. It is the differentiation and individuality of a singly occurrence, which, according to Pannenberg, is neglected by the natural sciences (and all nomological sciences – Pannenberg, 1990: 138).

It seems to be a matter of emphasis: "While the concept of the whole is not fully absent from the natural sciences but is subordinated to their interest in nomological descriptions of natural processes, the so- called human sciences, by contrast, are primarily interested in individual appearances" (1990:137).

Pannenberg equates *wholeness* with *individuality.* In doing that he does not realize that the term *wholeness* in the first place appeals to the spatial aspect of reality. However, there may be differences of opinion with regard to the placement of the whole-parts relation in the spatial aspect. Is it really true that our awareness of "wholes" and "parts" comes to the fore in the spatial aspect?

A first possible candidate would be the concept "unity". Aristotle already realized, however, that units are *discrete,* that is, that numbers, as discrete units, do not possess a *common barrier.* Only when there is indeed a common barrier can we speak of a *coherence* (continuity) and of a connected whole (totality). This sort of continuous coherence is unique to spatial extension and indeed implies that the whole-parts relationship first appears in the spatial aspect of our experience. Precisely because every part of a spatial continuum coheres with every other part, the infinite further division of spatial continuity is necessarily linked to this. Spatial continuity not only provides a foundation for the nature and original meaning of the whole-parts relationship, it also founds the infinite divisibility of continuity.

Having established this we simply said something holding universally for *space* (also designated as *modal universality).* It does not say anything about the *typical* nature of *specific* entities merely functioning within the aspect of space with its modal universality. Only concrete entities evince a *unique individuality.* Acknowledging this implicitly requires a shift in perspective: away from the dimension of *aspects* (functions) to that of *entities* and *events.* Consequently, by equating *wholeness* with *individuality* Pannenberg makes a jump from the *universal modal meaning* of space to the *typically entitary structure* of things, events or cultural artefacts as *individual* wholes or totalities. At the same time he has serious difficulties to explain the nature of particular positions taken in modern biology. When he says that it "is ... the individuality of the singly occurrence,

which natural science (and all nomological science) neglects, (Pannenberg, 1990:137)" he forgets that both *holism* and *nominalistic neo-Darwinian evolutionism* explicitly focus on the unique individuality of plant and animal life.[1]

Perhaps we should pursue an alternative route by first trying to find what is distinctive about scholarship in general without at once giving an account for the subsequent differentiation between natural sciences and the humanities. Before a meaningful differentiation between the natural sciences and the humanities could therefore be contemplated one should be able to characterize the uniqueness of science as such.

4. What makes science unique?

Introducing *method as* the distinctive feature of science begs the question. Adorno argues that even the most rigorous methods can lead to false or meaningless results if they are applied to problems for which they are not adequate or with which they deal in a distorting manner.

We can simplify this insight by asking the question: Does the *method* determine what we want to know scientifically, or is the method itself dependent upon the *nature* of whatever we want to understand scholarly?

Neeman (1986:80) is astutely aware of the shortcomings present in the *method-primacy* of positivism. According to him the philosophy of science of positivism starts with a basic assumption analogous to the gospel of St. John: *In the beginning was the method*!

Feminist epistemology also challenges the idol of method. Mary Daly and Marguerette Duras argue that it should be noted that the god *Method is* in fact a subordinate deity, serving Higher Powers. These are the social and cultural institutions which survival depends upon the classification of disturbing information as *non-data.*

In following a suggestion from Helmholtz in 1862 Hans-Georg Gadamer rejects the idea that there is a *distinct method* for the humanities. In his book *Truth and Method* (1960) Gadamer therefore argues against the idea that the human sciences have to have adequate methods before it could be said that they are *scientific.* He bluntly states: *"The human sciences have no method of their own."* In this regard Grondin writes:

> Gadamer takes his first orientation from Helmholtz's Heidelberg lecture of 1862 on the relationship of the natural and human sciences. According to this speech, still worth reading today, the

1 The eminent geneticist, Theodosius Dobzhansky, remarks: "Organisms are not types and they do not have types" (1969:8-9).

> natural sciences derive rules and laws from the collected materials of experience by means of logical induction. The human sciences proceed in a different manner. They arrive at knowledge by employing something like a psychological sense of tact. In this connection Helmholtz speaks of an artistic induction stemming from an instinctive sense or tact, for which there are no definable rules. Exaggerating only slightly, one could say that in the first part of *Truth and Method* Helmholtz is Gadamer's main interlocutor. If a book can be understood only by framing the question to which it is an answer, we can say it was Helmholtz's simple question about the way of knowing pr open to the human sciences that provided the original impetus for *Truth and Method.* ... It is therefore Gadamer's initial thesis that the scientific character of the human sciences can be understood more easily from the tradition of the concept of *Bildung* than from the modern idea of *scientific method* (Grondin, 1994:109).

Does this mean that features like *method, systematics, verification I falsification* and even the so-called relation between a *knowing subject* and a *study object* are insufficient to pin-point the distinctive uniqueness of science? Surely there are both scientific and non-scientific acts of verification / falsification, subject-object relations and systematic modes of procedure. The judge has to make sure (*verify*) that the evidence used against an accused is reliable and also ought to proceed in a systematic fashion while arguing a specific case. Similarly, the subject-object relation is common to non-scientific human experience as well. We need but consider the human subject using social objects (like furniture), or technical objects (tools), economic objects (money), semiotic objects (books), aesthetic objects (paintings), ethical objects (engagement or wedding rings), legal objects (property), and the like. All these objects indicate concrete entities which can equally much be studied by various special sciences (each from its own distinctive perspective). The decisive question is not: which *object is* studied, but: from which point of entry, *angle or functional perspective* is one gaining scientific access to reality. Does this mean that it is sufficient simply to say that science is characterized by abstraction?

That this is not the case follows from the presence of a particular kind of abstraction which forms part of our non-scientific experience. One may refer to this kind of abstraction with the apparently contradictory expression: *concrete abstraction* (or: *entitary abstraction).*

A little girl who first notices a dove and learns its name can already abstract concretely, for instance when she shortly thereafter refers to a shrike as a *dove.* The child actually indicates the *concept* “bird” with the

name (verbal sign) /dove/. This is only possible because the child has lifted out certain bird- characteristics from the concrete sensorially perceived image of a dove (e.g. a beak, wings, feathers) while simultaneously relinquishing the specific characteristics which distinguish the dove from the sparrow. This kind of abstraction is part of our everyday life, since we are continually identifying all sorts of entities, placing them in certain (conceptual) categories. Otherwise how would one be able to identify a particular horse as a horse (belonging to the category of horses), or a particular car as a car? Without general concepts such as *cars* and *horses* (in which the detail of particular cars and horses are relinquished), this would be impossible.

This kind of abstraction does not provide us with a theoretical insight into the nature of any aspect of reality. In order to account for the abstraction of aspects or modes of reality a closer specification is needed. This brings us at once into contact with what could be seen as the only truly distinctive characteristic of scholarly activities: *modal abstraction.*

In order to understand the meaning of modal abstraction (or: analysis) better, the distinction be*tween function concepts* and *thing concepts* ought to be understood.

5. Concepts of functions and concepts of things

The basic distinction is that between *entities* and *properties*. The *functional relation* between entities rely upon the *way* in which these entities exist. The Latin expression: *modus quo* (way/mode of being) comes to mind and we may substitute the *term property* with synonymous terms like *mode, function,* and *relation.* The adjective *modal* simply refers to the *aspectual dimension* of reality (related to the question about the *how?*), which ought to be distinguished from the dimension of entities (related to the question about the *what*?). The latter, *concrete entities, societal collectivities* and *events,* actually function concretely within all modes/aspects of reality – namely the numerical, the spatial, the kinematical, the physical, the biotical, the sensitive-psychical, the analytical, the cultural-historical, the sign-mode, the social aspect, the economic mode, the aesthetic facet, the jural function, the ethical mode and the certitudinal aspect.

6. Philosophy and the special sciences: a first perspective

If it is true that *modal abstraction is* the distinctive characteristic of science, then it should be obvious that we can distinguish within the category of sciences between those disciplines limited to the perspective of a particular aspect, and those paying attention to the foundational coherent

interlacement among all the aspects of reality – a coherence which also serves as the foundation of a theoretical analysis (an analysis via the gateway of abstracted aspects) of the interlacement which exists between the wide diversity of concrete entities, events and societal relationships. The latter kind of science (focused on a coherent totality view of the diversity within reality) is called *philosophy.* By contrast, every science limited to the perspective of a particular modality is designated as a *special science.*

7. The impasse of monistic -isms

The fact that theoretical thought entails *modal abstraction* has important implications for every (modally delimited) particular special science. Modal abstraction entails theoretical analysis and *analysis* always proceeds on the basis of *similarities* and *differences.* It is aimed at the *identification* and *distinction* of data.

Theoretical analysis would therefore be aimed at the *identification* of a particular aspect in *distinc*tion from other aspects. If reality contained only one aspect, analysis as such would be impossible, because we can only *identify* an aspect by *simultaneously* distinguishing it from all aspects which *differ* from the identified aspect. Theoretical analysis (modal abstraction) must therefore always simultaneously consider *at least two differing* aspects. Therefore every monistic *-ism* (such as physicalism, biologism, psychologism, historicism, aestheticism, moralism and pietism) cannot be justified – theoretical thinking by virtue of its (modally abstracting) nature always entails more than one aspect!

8. The limits of the special sciences (academic disciplines)

If a special scientific discipline delimits its terrain of study to the perspective of a *single* aspect, then it is obvious that the *identification* of the terrain of study of a special science can never be seen as an activity of that special science or as an activity taking place *within* the perspective of a particular aspect – simply because *more than one* aspect is involved in the identification of any aspect!

Since only philosophy can engage *more* than one particular aspect in its theoretical purview, this implies that no special science can indicate its own delimited terrain of investigation without proceeding from some or other philosophical view on the coherence which can account for the similarities and differences among the diverse aspects of reality. In other words: the nature of *modal abstraction* as distinctive characteristic of science implies that *every* scientific discipline has a *philosophical* foundation!

9. Philosophy and the disciplines: a second perspective

This course of reasoning is closely linked to the argument which runs as follows: The answer which a special scientist gives to the question: what is science? can never be a special-scientific answer, since every description such as this discusses the special science and thus transcends its limits. Consider the following description of mathematics as a discipline: *mathematics consists of subsidiary disciplines such as set theory, algebra, topology and the like.* This is no *mathematical statement* since the description is not in the least an axiom/proposition/proof/argument *in* set theory, algebra, topology and the like!

This course of reasoning is valid for every particular modally perspectival science. Even theology does not escape this truth. While every student of theology becomes acquainted through his or her studies with the discipline of the *encyclopaedia of theology* (which is responsible for the identification and delimitation of the subsidiary disciplines of theology), this discipline is never itself classified as a subsidiary discipline of theology (next to, e.g., the bibliological, dogmatological and ecclesiological groups). In this way theology admits that the question: what is theology? is not a *theological question!*

This situation is remarkable, furthermore, since, although *no* definition of *any* special science can have a special scientific character, *no* such definition can be given *without* accounting for the *scientific content* of the special science! *Even* when it is argued that mathematicians, theologians, and the like would be *best* equipped to answer questions such as: what is mathematics? what is theology? and the like, this does not abolish the truth that the answer which is *given precedes* work done

within the special sciences. The measure is not *who gives the definition,* but: *what is the nature of the definition!* This state of affairs once more confirms the indissoluble coherence which exists between every special science and *its philosophical foundational questions.*

We could also describe this state of affairs as follows: there are basically two kinds of science, (i) the kind of science which, when it discusses itself, *transcends* its own limits, and (ii) the kind of science which, when it discusses itself and the general question of the nature of science, remains *within* its own limits. The first option indicates *a special science,* and the second indicates philosophy. In this sense philosophy is *the science of sciences,* which is engaged *inter alia* with the philosophical foundational questions of the special sciences.

10. Modal universality: the concern of Kant's epistemology

Kant already stumbled upon the nature of modal analysis with the basic concern of his *Critique of Pure Reason.* In his search for the synthetic *a priori* Kant focused upon the combination of two considerations: (i) acknowledging conditions making experience as *such possible*, and (ii) emphasizing the *universality* of those conditions. Put differently: Kant struggled with the age-old issue of *modal universality* (already underlying Platos' concern with supersensory ideas – of Strauss, 2000). Positivism implicitly restricts itself to what can be *observed* through the senses. This opens the gate to an account of the experience-based knowledge we have of entities, but it precludes a meaningful account of knowledge of the *properties* (modal functions) of these entities!

Is it possible *to perceive* the numerical aspect? Can we *weigh* the spatial aspect? Can we determine the *volume* of the kinematical aspect? Can we measure the *distance* between the spatial aspect and the physical aspects? What does the biotical aspect *taste* like? The absurdity of these questions demonstrates the Achilles' heel of positivism.

11. Natural sciences and the humanities: laws and norms

In spite of all the similarities between the natural sciences and the humanities there still is one crucial and meaningful difference: whereas the point of view of the natural sciences is delimited by aspects governed by *natural laws,* the angles of approach of the humanities always display a *normative character.*

This is amply evident from the normative contraries in the post-psychical aspects: logical – illogical; historical – unhistorical (not the same as a-historical!); social – unsocial (polite/impolite); economic – uneconomic; legal – illegal, and so on. Note that we do not have to agree about what we consider to be logically sound or economically responsible to agree that the contraries logical – illogical and economic – uneconomic are *normative!*

12. “Facts” and “Values” revisited

It belongs to the legacy of modern philosophy since Kant to distinguish between two supposedly disconnected *spheres of being, viz.* that of *facts* and that of *values.* Kant himself has expressed this fundamental dualism as follows: understanding, as the formal law-giver of natural reality is only concerned with what *is,* whereas practical reason (showing the primacy of the ideal of a free and autonomous personality) alone can cope with the *ought-to-be* (Sein / Sollen).

In a rather witty way MacIver once reacted as follows:

> The following seem to be the chief tenets of their creed. First, I believe in facts, and to be saved I must discover new ones. Second, when I have discovered them, I must if possible measure them, but, failing that consummation, I must count them. Third, while all facts are sacred, all theories are of the devil. Hence the next best thing, if one can't discover new facts, is to refute old theories (1967:21).

The influence of neo-Kantian value-philosophy did not cancel the polarity between *is* and *ought-to-be,* but merely introduced their value-idea in the latter sphere. Subsequently we encounter the opposition of facts and values in the differentiation between (scientific) *description* and (non-scientific) *evaluation'* However, being *subject* to the *modal logical norms* of *identity* and *(non-)contradiction* every analytical act (as an act of identification and distinction) ought to *conform* to these (and other logical) norms. Hence it should be seen as just a different form of *evaluation, viz. analytical evaluation!*

13. The misplaced ideal of objectivity

It is a generally accepted view that subjectivity should be seen as something *disturbing* scientific endeavours – hence it must be replaced with the ideal of *objectivity*.

However, to see *subjectivity* as a disturbing factor in scientific activities presupposes the existence of some or other *normative standard.* If the input of subjectivity in the course of scientific research and scholarly activities is evaluated as something *arbitrary,* this very evaluation already applies a normative standard by judging subjectivity (in its *arbitrariness)* as *not conforming* to the norm. The opposite of *arbitrary subjectivity,* however, is not *objectivity but norm-conforming* subjectivity.

Arbitrariness is an *anti-normative* figure, presupposing the existence of a norm and leaving open the possibility for normatively correct subjective actions.

14. Concluding remark

Not only does the distinctive feature of science, namely *modal abstraction,* opens the way to an understanding of the coherence and difference between philosophy and the special sciences, since it also helps us to account for the difference between the natural sciences and the humanities in terms of the difference between *natural laws* and *cultural norms*.

When human beings act under the guidance of *normative vistas* they transcend animal abilities. Normatively correct or incorrect behaviour is only possible for human beings who function with a free and accountable will. No animal can think logically or illogically, shape historically or unhistorically, act socially or anti-socially, be thrifty or spendthrift, just or unjust. The lack of specialization of the three substructures of being human (the physical-chemical substructure, the biotic substructure, and the emotional-sensitive substructure) goes hand-in-hand with their directedness towards the normative qualification of a person's bodily existence.

Since the whole "normative instrumentarium" of a person not only indicates the distinctively *human-ness* of being human, but also qualifies the human being in its entire bodily existence, it may be well to refer to this qualifying dimension – following the preference of the author's colleague, prof J. H. Smit – as the *normative structure* of the human being.

In addition to the *ontic* foundation of the distinctness of the humanities we here also find an anthropological argument added.

The full acknowledgement of the historicity and interpretative dimensions of scholarship – justly emphasized by postmodernism – does not justify a total denunciation of discerning *ontic features.* Rather, constructive criticism can only enrich and deepen the provisional reflection of this article!

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